National Report on Argo-2010

by Republic of Korea

Deployment in 2010 and Future Plan

National Institute of Meteorological Research of Korea Meteorological Administration (METRI/KMA) and Korea Ocean Research and Development Institute (KORDI) are involved in the International Argo Program since 2001. In 2010, METRI/KMA deployed total of 12 floats in the East/Japan Sea (8 floats) and southwestern region of Kamchatka peninsula (4 floats).

Total 14 floats will be deployed in the Northwestern Pacific Ocean (6 floats) and the East/Japan Sea (8 floats) in 2011. METRI/KMA has also a plan to deploy 15 floats (one float with DO sensor) in 2012. It is expected that METRI is able to secure funding to maintain the current level of float launch for the next several years. KORDI's strategy regarding the Argo program is under revised in terms of contribution toward the global ocean observation.

Status of Argo data management

METRI's RTQC Argo data with TESAC and NetCDF format are transmitted thru GTS network and GDAC, respectively. Currently, we distribute the pressure-corrected profile data, and SP is given in the technical file. We also have a plan to transmit Bufr-formatted message this year using the perl program developed by Japan.

National Fisheries Research and Development Institute (NFRDI)/Korea Oceanographic Data Center (KODC) is responsible for Delayed Mode QC (DMQC). KODC has been preparing algorithms for the renewal of Korean DMQC data including KORDI's data in line with new version of Argo QC manual. This work will be finished by the end of this March, and thereafter Korean DMQC data will be provided normally.

Research and operational uses of Argo data

METRI/KMA has a three-year plan to develop the operational ocean forecasting system for the global ocean. We will develop an OI-based ocean data assimilation system using NEMO ocean model in 2011. Also, we have started to generate reanalysis fields for the East/Japan Sea since 2010, and we will perform observing system experiments to investigate the impact of Argo data for the reanalysis fields in the East/Japan Sea, where Argo observation is the most dense region in the world ocean. We confirm that the Argo data are very effective to improve modeled ocean fields, based on the comparison with the surface velocity from drifter buoy (see Figure 1 and 2).
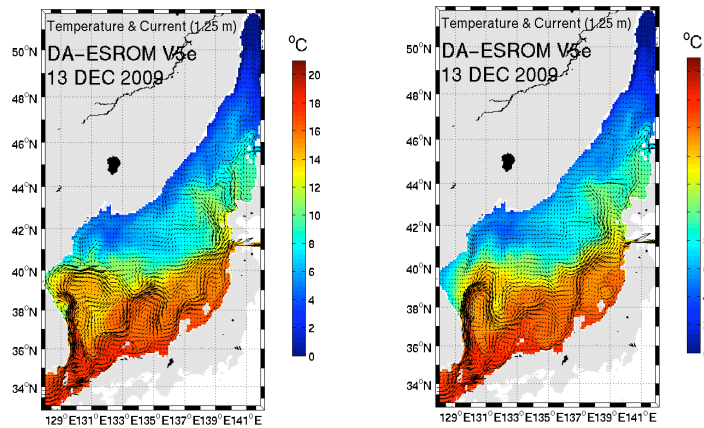

Figure 1 Comparison of surface temperature and velocity distributions between model results assimilated with SST, SSH, temperature profiles including Argo (left panel) and No-Argo data (right panel).
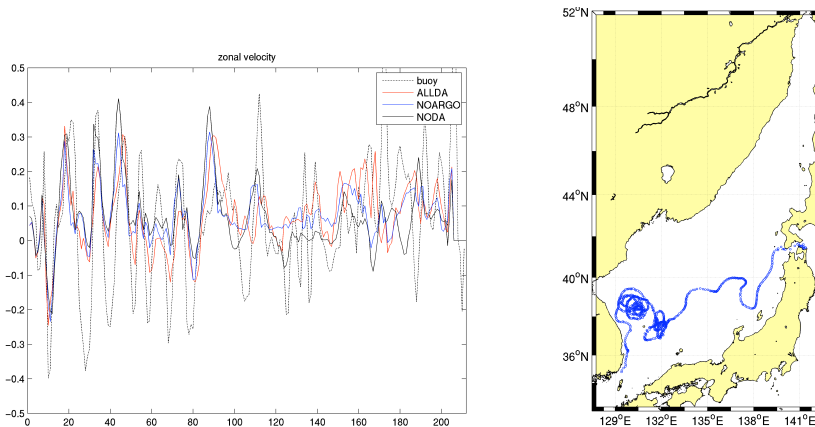

Figure 2 Time variation of surface velocity at 15 m depth (zonal component). Black dot line indicates velocity of surface drifter (see its

trajectory at right panel). Red and blue solid lines show the model results assimilated with all data (including Argo) and withheld Argo data along the trajectory, respectively.

Also, KORDI uses Argo data for scientific research and a data assimilating-model to understand circulation in East/Japan Sea. Researches on the variability of heat content in the mixed layer, data assimilation and other application for ocean modeling are actively carried out by several universities in Korea.

The float of WMO_Id 3900197 made its first profile at the Drake Passage on 4th December 2003, and it is working for more than 7 years following the ACC somehow, which covers about 60 % of a whole ACC system (Figure 3). We have its last profile on 16 January 2011 with heading as below.

02096 042558 73 31 K 3 2011-01-16 08:10:04 -38.560 147.479 ….

It looks like it is already ashore or dead. Its last position is (-38.560 N, 147.479 E), of very shallow profile about 40m.
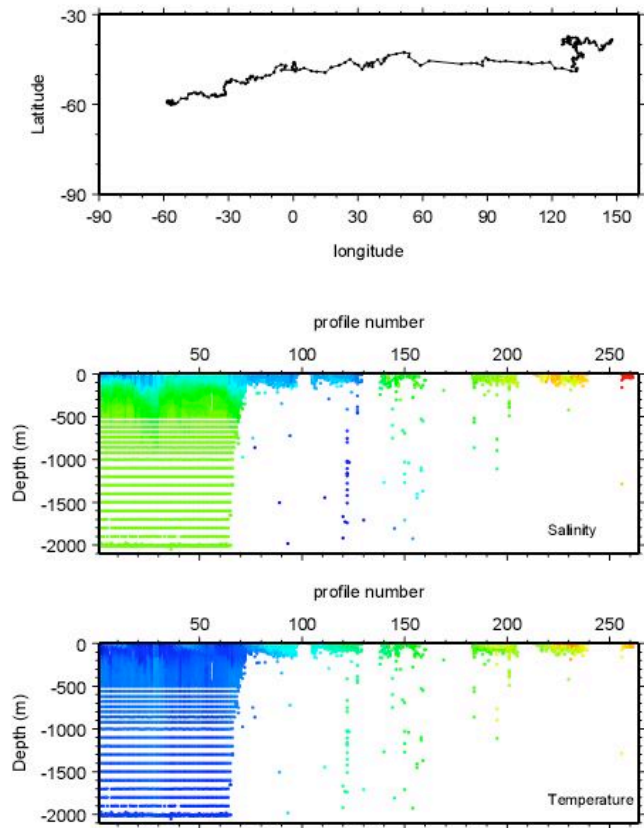
Figure 3 Trajectory (upper panel) and time-plots of salinity (middle) and temperature (lower) obtained from the float deployed at Drake Passage (WMO ID 3900197).